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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MACARTHUR, SYLVIA

ART UNIT PAPER NUMBER

1763

DATE MAILED: 07/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/916,164

Applicant(s)

SABDE ET AL.

Examiner

Sylvia R. MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 60-63, 65, 76-79 and 84-105 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 60-63, 65, 76-79 and 84-105 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>5/9/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 4/22/2005 have been fully considered and thus a new ground of rejection has been presented.

Applicants assert that Molnar does not disclose a non-abrasive lubricating planarizing solution wherein the lubricating planarizing solution comprises homopolymers and copolymers of acrylic acid crosslinked with a polyalkenyl polyether.

Examiner argues that the specific type of lubricant used is a matter ~~of~~ intended use and that the prior art by Molnar is inherently capable of using this substance in its apparatus.

Applicant asserts that Wijekon et al does not teach a third container with a mixing site. Examiner agrees and thus presents Roy (US 6,572,731) which teaches a method and apparatus for mixing at least two different slurries.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 130 as recited on page 6, line 28 115 as recited on page 9, line 12 and thereafter. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header

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(as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 134, 135, 136, 137, 138, 139as appear in Fig. 3. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Note on Figure 3, element 113 has been used twice, once for the support surface and secondly for the mixing site. The second occurrence of 113 should be 115.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 60 is rejected under 35 U.S.C. 102(e) as being anticipated by Molnar (US Patent No. 6,634,927 B1).

Molnar teaches (Figs. 1-3) a support table 40, a polishing pad on the support table, the polishing pad 26 having a body, a planarizing surface on the body, and a plurality of abrasive particles fixed/attached to the body at the planarizing surface; a carrier assembly having a carried head 16 configured to hold a substrate assembly and a drive mechanism (motor) (column 7 line 20 through column 12, line 23) attached to the carrier head to move the carrier relative to the polishing pad; and a non-abrasive lubricating planarizing solution without abrasive particles on the polishing pad (col. 8 lines 30-36). Molnar further teaches a non-abrasive lubricating solution wherein various solutions are discussed (column 26, line 9 through column 29, line 12).

Regarding the viscosity of the lubricating solution : The concentration of lubricant is from 0.1 to 15%. Lubricant concentration outside this range are currently believed to be useful (viscosity of 4-100 cp) (column 26, lines 10-23).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claim 61, 84-105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar (US Patent No. 6,634,927 B1) in view of Roy (US 6,572,731).

Molnar teaches all limitations of the claims as discussed above except for explicit disclosure of a mixing site coupled to the solution and the lubricant and being coupled to a nozzle to dispense the mixed solution onto the polishing pad.

Roy teaches a multi-fluid polishing processing apparatus (Fig. 1) , see abstract. First 66 and second 68 slurry containers are provided. The slurry is pumped using pumps 70 and 71 respectively. The slurries enter the splitter box 83 where mixed slurry 80 emerges and is agitated by pump 72. See col. 5 lines 18-28.

The motivation to provide the apparatus of Molnar with a multi-fluid polishing process is that it allows a plurality of polishing fluids to be added to the process in-situ and mixed prior to contacting the wafer in the polishing process. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide the apparatus of Molnar with a multi-fluid polishing process of Roy.

Further regarding claims 84-105:

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Molnar fails to expressly teach the use of ammonia, though ammonia is a known cleaning agent with chemical and physical properties that make it desirable to utilize in a polishing environment.

Molnar fails to teach that the lubricating solution comprises the components as claimed. However, Molnar does teach that the lubricant is made of a sulfurized fatty acid soaps. Glycerol (regarding claims 84 and 86) is a suitable type of soap and is well known for its chemical and physical properties.

Molnar also teaches that the lubricating solution comprises glycols made of propylene glycol or polymer and copolymers and mixtures thereof see the sentence joining col. 27 and 28. It is even noted that polypropylene (regarding claims 88, 90, and 92) is a preferred finishing aid in col. 27 lines 48-50.

Regarding claim 96: Molnar does specifically claim polyvinyl alcohol as a lubricating solution, but does cite the use of alcohols in col. 28 lines 17-25.

Regarding mixing the solutions with ammonia. Ammonia is a known cleaning agent with chemical and physical properties that make it desirable to utilize in a polishing environment. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to use glycerol and polypropylene glycol as the non-abrasive lubricating planarizing solution as the lubricant in aqueous solution of ammonia as claimed.

7. Claim 62-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Molnar (US Patent No. 6,634,927 B1).

Regarding claims 62, 64, 84, and 86: Molnar fails to teach that the non-abrasive lubricant comprises glycerol.

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Molnar does teach that the lubricant is made of a sulfurized fatty acid soaps. Glycerol is a suitable type of soap and is well known for its chemical and physical properties.,

Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to use glycerol as the non-abrasive lubricating planarizing solution as the lubricant.

Regarding claims 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, and 83: Molnar fails to teach the specific viscosity of the lubricating solution. However, the resulting viscosity of a solution is a result-effective or optimizable parameter well known in the field of solution chemistry. The motivation to provide a mixture with a viscosity of 10-20cP or 10-100cP is that this viscosity will ensure that the polishing surface is adequately buffered from the wafer to prevent over polishing or damaging the wafer and thus causing an undesirable result.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,


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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the core hours of 9 a.m. and 3 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sylvia R MacArthur
Patent Examiner
Art Unit 1763

July 25, 2005

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PARVIZ HASSANZADEH
SUPERVISORY PATENT EXAMINER